IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Patent Application No. 10/530,394

Applicant: Verschueren

Filed: April 4, 2005

TC/AU: 2854

Examiner: Zimmerman, Joshua D.

Docket No.: 234854 (Client Reference No. GSGN02109)

Customer No.: 23460

APPELLANT'S APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In support of the appeal from the final rejection dated November 1, 2007, Appellant hereby submits his brief on appeal.

Real Party In Interest

The patent application that is the subject of this appeal is assigned to Agfa-Graphics NV.

Related Appeals and Interferences

There are no appeals or interferences that are related to this appeal.

Status of Claims

Claims 1-12 and 15-34 stand rejected and are the subject of this appeal. Claims 13-14 and 35-41 have been canceled. The claims under appeal are reproduced in the "*Claims Appendix*".

Status of Amendments

The patent application was originally filed with 10 claims. In a Preliminary Amendment filed on April 4, 2005, claims 1-10 were amended and claims 11-40 were added. The amendment was entered.

In the Reply to Office Action filed on June 7, 2006, claims 9 and 26 were amended, and claims 13-14 and 35-40 were canceled. The amendment was entered. A Final Office Action issued on August 7, 2006. Claim 1 was amended in the Reply to the Final Office Action filed on October 3, 2006. The Advisory Action issued on October 20, 2006, indicated that the amendment to claim 1 would require additional searching and did not place the application in condition for allowance. A Request for Continued Examination was filed on November 6, 2006, and the previously-filed amendment to claim 1 was entered.

Subsequently, a non-final Office Action issued on January 5, 2007. Claim 41 was added in the Reply to Office Action filed on April 3, 2007. This amendment was entered. A Final Office Action issued on June 25, 2007. A Notice of Appeal, including a request for a Pre-Appeal Brief Request for Review, was filed on August 22, 2007. On October 23, 2007, a Notice of Panel Decision from Pre-Appeal Brief Review issued, indicating that the Final Office Action dated June 25, 2007, was withdrawn. A new Final Office Action issued on November 1, 2007.

The Notice of Appeal was filed on January 22, 2008, concurrent with Reply to Final Office Action, in which claim 41 was canceled. An Advisory Action issued on February 6, 2008, indicating that the amendment was entered, but that the rejections stated in the Final Office Action were maintained. No reply was filed in response to the outstanding Advisory Action.

Summary of Claimed Subject Matter

There is one (1) independent claim in this appeal, namely, claim 1, which is discussed below.

Independent claim 1 is supported by the originally filed claim 1 and by the specification at page 6. Claim 1 is directed to a method of making a heat-sensitive lithographic printing plate precursor comprising the steps of:

(i) providing a web of a lithographic support having a hydrophilic surface;

(ii) applying a coating comprising a phenolic resin on the hydrophilic surface of the web;

(iii) drying the coating;

(iv) heating the web wherein the temperature of the web is maintained above 150ºC during a period of between 1 and 30 seconds; and

(v) winding the precursor on a core or cutting the precursor into sheets.

Grounds of Rejection To Be Reviewed on Appeal

1. Whether claims 1, 2, 4-8, 10, 12, 17, 22-25, 30, 32 and 34 are unpatentable under 35 U.S.C. § 103(a) over U.S Published Patent Application US 2002/0098288 (Kamitani) in view of International Patent Application Publication WO 99/21715 (McCullough et al.).

2. Whether claims 3, 11, 15, 16, 18-21, 29, 31 and 33 are unpatentable under 35 U.S.C. § 103(a) over Kamitani and McCullough et al. in further view of U.S. Patent 5,380,612 (Kojima et al.).

3. Whether claims 9 and 26-28 are unpatentable under 35 U.S.C. § 103(a) over Kamitani and McCullough et al. in further view of U.S. Patent 6,007,240 (Price).

Argument

1. Final rejection under 35 U.S.C. § 103(a) over Kamitani in view of McCullough et al.

a. Claims 1, 4-8, 10, 12, 17, 22-25, 30, 32 and 34

The Final Office Action alleges that the combination of Kamitani and McCullough et al. renders the claims obvious. The Final Office Action admits that Kamitani "does not specifically teach that "the temperature is maintained above 150˚C during a period of between 1 and 30

seconds," and further admits that "Kamitani teaches that increasing the temperature … to above 150˚C for a period of time not exceeding 5 seconds results in deleterious effects." *See Final Office Action, p. 4*. Nonetheless, the Final Office Action points to McCullough et al. and alleges that it provides the following teaching concerning the heating of the Kamitani precursor:

> . . . tables 1 and 2 clearly teach heating to 153ºC and 152ºC, respectively. Even though the outcome might have been less than desired, a functioning printing plate that was able to withstand repeated printings was obtained (Table 1 and 2). Said printing plate would therefore be considered a "success." If anything, these results *encourage* one having ordinary skill in the art to seek out solutions to the problems associated with higher heating temperatures.

See Final Office Action, p. 13 (emphasis in original). The Final Office Action continues its remarks concerning McCullough et al., noting that

> . . . McCullough et al. do suggest an upper [temperature] limit, said limit is qualified as being merely a 'guide' that McCullough et al. merely 'favor' (page 7, lines 24-25). McCullough et al. clearly teach, and even *encourage*, using trial and error to determine the heating temperature (page 7, lines 23-24). In fact, McCullough et al. *explicitly* state that the upper temperature limit is left up to the reader to determine, by trial and error (page 7, lines 23-24). These teachings clearly would not prohibit or prevent one having ordinary skill in the art from trying, though routine experimentation, a higher temperature.

See Final Office Action, p. 14 (emphasis in original).

Appellants respectfully submit that the combination of the Kamitani and McCullough et al. fails to suggest to those of ordinary skill in the art the presently claimed invention. To the contrary, each of the Kamitani and McCullough et al. references teaches away from the temperature limitation of the claimed method, which includes, *inter alia*, the heating conditions required by step (iv). Moreover, even if one skilled in the art were to somehow combine these references, the inventive method would not be provided.

Specifically, the analysis set forth in the Final Office Action fails to give appropriate weight to the clear and unambiguous temperature boundary established by the disclosure and teaching of each of Kamitani and McCullough et al. It is respectfully submitted that these boundaries are more than simply "guides," teaching instead the existence of an upper temperature ceiling that cannot be exceeded without adversely affecting performance.

Kamitani, for example, teaches one skilled in the art to not exceed 140ºC because "when the final temperature reached in either the hot air drying device 20 or the far infrared radiation heating device 50 was **140ºC or more**, **the developability deteriorated**." When this temperature exceeded **145ºC**, the "**developing was poor**." *See Kamitani ¶ [0087] (emphasis added)*. Kamitani indicates that this teaching is supported by the data of Table 1. Table 1 of Kamitani shows that precursors having an exit surface temperature of 142ºC had faults with respect to developability and overall quality, while precursors having an exit surface temperature of **153ºC** had **unsatisfactory developability and overall quality**. *See Kamitani, Table 1 (entries for 141ºC and 152ºC)(emphasis added).*

Kamitani states:

> Specifically, for a thermal type digital direct printing plate, **the final reached temperature of the photosensitive coated layer must be 125 to 145ºC**, and preferably 130 to 140ºC.

See Kamitani, ¶[0025] (emphasis added).

When a prior art reference concerning a printing plate precursor states that the "final reached temperature of the coated layer **must be 125 to 145ºC,** and includes data demonstrating that developability of that precursor deteriorates when the plate is heated above 140ºC, and was poor and unsatisfactory at or above 145ºC, the teaching provided thereby is clear and unambiguous—one skilled in the art should not heat a precursor to these temperatures (and should certainly never exceed these temperatures) because the precursor will not function for its intended purpose. *See, e.g., In re Gordon, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984) (proposed modification of prior art reference not proper if modification would render prior art unsatisfactory for its intended purpose)*. No one skilled in the art would desire a precursor that cannot be properly developed, i.e., whose developability is "compromised," "poor" or "unsatisfactory." Yet, this is precisely what Kamitani teaches—that the final temperature "**must be 125 to 145ºC,"** and when one exceeds this temperature, unsatisfactory material results.

Contrary to the opinion expressed in the Final Office Action, the teaching of Kamitani is indeed clear and unambiguous—one must not exceed 145ºC. Thus, based on the explicit language and confirming data, one would have no reasonable expectation of success if one were

to heat a precursor at a temperature of grater than 140°C (because developability deteriorates above this temperature), and thus no one skilled in the art would even experiment with temperatures above 140°C, let alone above 145°C as Kamitani teaches that "the final treached temperature . . . **must be 125 to 145°C.** *See Kamitani, ¶[0025].* Again, the clear and unambiguous teaching of Kamitani is that a precursor should not be heated to a temperature exceeding 140°C, and certainly not in excess of 145°C.

Seeking to overcome the limitations of Kamitani, the Office Action alleges that McCullough et al. teaches that the temperature of a heating step may be varied:

> McCullough et al. clearly teach, and even *encourage*, using trial and error to determine the heating temperature (page 7, lines 23-24). In fact, McCullough et al. *explicitly* state that the upper temperature limit is left up to the reader to determine, by trial and error (page 7, lines 23-24).

See Final Office Action, p. 14.

While the Office Action may desire to lift a portion of the alleged teaching provided by McCullough et al., it may only do so if the portion does not distort the teaching of the reference as a whole. *See, e.g., W.L. Gore & Assocs. v. Garlock, Inc., 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), cert denied, 469 U.S. 851 (1984) (claims directed to rapid stretching of unsintered, highly crystalline PTFE not obvious over combination of reference that taught rapid stretching of reduced crystalline polypropylene combined with reference that generally taught stretching of unsintered PTFE because prior art also taught that polypropylene should have reduced crystallinity before stretching and that PTFE should be stretched slowly).* Indeed, it is well established that a reference must be considered for all that it teaches, including disclosures that teach away from the claimed invention. *In re Hedges, 783 F.2d 1038, 1041, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986) ("It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.")* (citations omitted).

In this case, even if one assumes that McCullough et al. teaches one skilled in the art to vary the time and temperature during heating, the boundaries taught by that very same reference (as well as those taught by Kamitani) preclude it from teaching the invention as claimed.

McCullough et al. teaches that the temperature of the precursor (after cutting into sheets) ***should not exceed 90ºC***, with 50ºC-60ºC being the most favored. *See McCullough et al. pp. 7-8*. Indeed, the temperatures referenced in the McCullough et al. examples support this teaching. It should be appreciated that the temperatures in the McCullough et al. examples do not refer to a precursor temperature, but instead to the temperature of the "hotbox oven." For example, Example 2 uses a hotbox oven at 110ºC and 140ºC for certain time periods, but provides no information as to the temperature of the precursor *per se*. *See McCullough et al., Example 2.* There is no basis other than hindsight to conclude that McCullough et al. would in any way suggest that the precursor temperature be heated above 90ºC, let alone above 150ºC—an increase of 66% over the maximum disclosed temperature of 90ºC. *See McCullough et al., p. 7.*

This is especially true when one considers that Kamitani unambiguously teaches that heating at a temperature of 140ºC creates undesirable problems in the final product, while teaching that the final reached temperature of the photosensitive layer in thermal type printing plates **must be 125 to 145ºC**." Thus, even if one were to accept the proposition that McCullough et al. teaches one to vary the temperature of Kamitani (such "variability" being suggested in the Final Office Action), one skilled in the art would never vary the temperature above 140ºC (and certainly not over 145ºC) because Kamitani includes a prohibition against doing so in both words and data. Thus, the arguments advanced in the Final Office Action regarding variability lacks merit because they ignore the teachings set forth in the references. *See In re Hedges, 783 F.2d 1038, 228 U.S.P.Q. 685 (claimed process for sulfonating diphenyl sulfone at a temperature above 127ºC was not obvious over prior art that suggested using lower temperatures to achieve optimum results because of evidence of charring, decomposition, or reduced yield at higher temperatures).* That Appellant has proceeded contrary to the general teachings of the cited art is strong evidence of nonobviousness. *See Gore, 721 F.2d at 1552, 220 U.S.P.Q. at 312-313 ("To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.").*

Thus, even if the references are combined as suggested by the Final Office Action, the inventive method which includes, *inter alia*, the heating conditions required by step (iv), would

not be provided. Instead, Kamitani clearly and unambiguously teaches one skilled in the art to ***not*** heat the precursor to the claimed temperature, and indeed teaches that temperatures less than 145ºC must be used in order to avoid problems that arise when the precursor is heated to a temperature of above even 140ºC. This upper limit on temperature (*i.e., 145ºC*) taught by Kamitani is a hard boundary that, according to the teaching of this reference, cannot be exceeded without providing an inferior product. *See Kamitani, ¶[0025].* Clearly, one skilled in the art would not have a reasonable expectation of success if following the approach suggested in the Final Office Action because the references advises to the contrary. *See Manual of Patent Examining Procedure ("MPEP") § 2143.01 (2007) ("The mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art"), citing KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007).*

Further, and in connection with the timing aspect of precursor heating, it is clear that McCullough et al. teaches that a ***minimum of four (4) hours of treatment must be used in all cases***:

> The time for the heat treatment can also be determined by trial and error. Generally, the lower the temperature for the heat treatment, the longer the time should be. ***In all cases*** *however we favor carrying out the heat treatment* ***for at least 4 hours****; and preferably for at least 24 hours and most preferably for at least 48 hours, especially in the case of the lower temperatures.*

See McCullough et al., pp. 7-8 (emphasis added). The lowest heating time taught by McCullough et al. is, therefore, 4 hours. Thus, a fair reading of McCullough et al. based on its plain language teaches that any variation in the time of heating should occur between 4 and 48 hours. This is markedly different than the heating time recited in the claims, which is in the minute range. One cannot properly pick a portion of a reference for one purpose, and ignore the teaching of the reference as a whole. Thus, a combination of this reference with Kamitani is improper, and would not in any event provide the invention as claimed.

In addition, McCullough et al. does not teach or suggest the heating of its materials on a web. On the contrary, McCullough et al. teaches that the heating must be undertaken only ***after***

the precursors are cut into sheets. *See, e.g., McCullough et al. examples.* This, of course, is contrary to both Kamitani and to the claimed invention.

Thus, Kamitani clearly and unambiguously teaches precursor temperature limits that, in its own words "must be 125 to 145ºC" in order to avoid problems*, e.g.,* developability and overall quality. (This temperature limit is below that recited in the claims.) Moreover, McCullough et al., to the extent it is at all relevant, teaches that the temperature of the precursors after they are cut into sheets should not exceed 90ºC. Thus, even of one assumes that Kamitani could be combined with McCullough et al., the alleged variability in time and temperature would not overcome the time and temperature boundaries clearly established by both Kamitani and McCullough et al. when taken as a whole—a boundary that does not reach, *inter alia*, the heating limitation set forth in the inventive claims, nor the claims as a whole. None of the cited art teaches the temperature or timing limitations recited in the claims, and the only manner in which the claimed invention can be derived is via hindsight. As recognized in the Final Office Action, Kamitani and McCullough teach "one having ordinary skill in the art that there are benefits to be had in using a lower temperature." *See Final Office Action, p. 15.* This is precisely the point—these references teach, and in the case of Kamitani require, the benefit of relatively low temperatures, while Appellant claims the use of relatively high temperatures in the claimed methods.

The reference to *In re Geisler* is inappropriate. In that case, the Wagner reference did not include any disclosure with respect to the thickness of the third (protective) layer, while the Zehender reference disclosed that the protective layer should be sufficiently thick to provide the protection desired and still be colorless. Zehender stated that this would be provided by a layer thickness of 100 to 600 Angstroms. Unlike the present case (assuming the layer thickness is analogous to temperature), the Wagner reference placed no restriction on the thickness of the protective layer, while Zehender, unlike the prior art cited in the present appeal, did not state that the coating thickness "must be" within a certain range.

In view of the foregoing, Appellant submits that the claims are not obvious over the cited prior art. Reversal of the final rejection of claims 1, 4-6, 17 and 22-25, 30, 32 and 34 over this combination is respectfully requested.

b. Claim 2

Claim 2 further requires that, during the heating step of claim 1, the web temperature is maintained above 170ºC during a period of between 1 and 30 seconds.

For the reasons set forth above in Section 1.a., the asserted combination (assuming arguendo the combination is justifiable) fails to support a *prima facie* obviousness rejection because, even if one assumes the references are properly combinable, the references fail to teach maintaining the web temperature above 170ºC during a period of between 1 and 30 seconds. Reversal of the rejection of claim 2 on this basis is respectfully requested.

c. Claims 7, 8, 10, 23-25 and 34

These claims further require a cooling step, this step being performed within the claimed parameters. In response, the Final Office Action notes only that the exact cooling rate is not disclosed in Kamitani or McCullough et al., but Kamitani allegedly teaches the ability to change the cooling time to meet process needs. It is further argued that "it is an inherent property of polymer processing that cooling too quickly from a temperature above the Tg to a temperature below the Tg results in voids and/or other defects in the polymer microstructure, thus deteriorating the polymer stability. Therefore, it would have been obvious through routine experimentation to make the cooling rate as claimed. *See, e.g., Final Office Action, p. 6-7.*

A *prima facie* case has not been established because no prior art reference has been identified in support of the purported teaching, and in particular in the context of the claimed subject matter. Absent identification of a relevant reference, Appellant requests reversal of the rejection.

2. Final rejection of claims 3, 11, 15, 16, 18-21, 29, 31 and 33 under 35 U.S.C. § 103(a) over Kamitani and McCullough et al. in further view of Kojima et al.

a. Claims 3, 11, 15, 16, 18-21, 29, 31, and 33

The Final Office Action alleges that the combination of Kamitani and McCullough et al., in further view of Kojima et al., renders the claims obvious. Claims 3, 11, 15-16, 18-21, 29, 31,

and 33 depend from claim 1, and, therefore, incorporate all of the limitations of claim 1. The combination of Kamitani and McCullough et al., as discussed in detail above, fails to render claim 1 obvious. Because Kojima et al. does not overcome (and indeed is not alleged to do so in the Final Office Action) the fatal deficiencies in the Kamitani and McCullough et al. references, reversal of the additional rejection entered against claims 3, 11, 15-16, 18-21, 29, 31, and 33 is also proper, and is respectfully requested. *See Final Office Action, pp. 7-8, 11-13.*

b. Claims 20, 21 and 33

These claims further require a cooling step, this step being performed within the claimed parameters. In response, the Final Office Action notes only that the exact cooling rate is not disclosed in Kamitani or McCullough et al., but Kamitani allegedly teaches the ability to change the cooling time to meet process needs. It is further argued that "it is an inherent property of polymer processing that cooling too quickly from a temperature above the Tg to a temperature below the Tg results in voids and/or other defects in the polymer microstructure, thus deteriorating the polymer stability. Therefore, it would have been obvious through routine experimentation to make the cooling rate as claimed. *See, e.g., Final Office Action, pp. 8, 12.*

A *prima facie* case has not been established because no prior art reference has been identified in support of the purported teaching, and in particular in the context of the claimed subject matter. Absent identification of a relevant reference, Appellant requests reversal of the rejection.

3. Final rejection of claims 9 and 26-28 under 35 U.S.C. § 103(a) over Kamitani and McCullough et al. in further view of Price

The Final Office Action alleges that the combination of Kamitani and McCullough et al., in further view of Price, renders the claims obvious. Claims 9 and 26-28 depend from claim 1, and, therefore, incorporate all of the limitations of claim 1. The combination of Kamitani and McCullough et al., as discussed in detail above, fails to render claim 1 obvious. Because Price does not overcome the fatal deficiencies in the Kamitani and McCullough et al. references, Appellant respectfully submits that reversal of the additional rejection entered against claims 9 and 26-28 on this basis alone is warranted. *See, e.g., Final Office Action, pp. 8-9.*

These claims further require a cooling step, this step being performed within the claimed parameters. In response, the Final Office Action notes only that the exact cooling rate is not disclosed in Kamitani or McCullough et al., but Kamitani allegedly teaches the ability to change the cooling time to meet process needs. It is further argued that "it is an inherent property of polymer processing that cooling too quickly from a temperature above the Tg to a temperature below the Tg results in voids and/or other defects in the polymer microstructure, thus deteriorating the polymer stability. Therefore, it would have been obvious through routine experimentation to make the cooling rate as claimed. *See, e.g., Final Office Action, pp.8-9.*

A *prima facie* case has not been established because no prior art reference has been identified in support of the purported teaching, and in particular in the context of the claimed subject matter. Absent identification of a relevant reference, Appellant requests reversal of the rejection.

Conclusion

For all of the foregoing reasons, Appellant respectfully requests reversal of the rejections set forth in the Final Office Action dated November 1, 2007.

Respectfully submitted,

May 20, 2008

/Christopher T. Griffith/
Christopher T. Griffith, Reg. No. 33,392
LEYDIG, VOIT & MAYER, LTD.
Two Prudential Plaza, Suite 4900
180 North Stetson Ave., Suite 4900
Chicago, Illinois 60601-6731
(312) 616-5600 (telephone)
(312) 616-5700 (facsimile)

Claims Appendix

1. A method of making a heat-sensitive lithographic printing plate precursor comprising the steps of

(i) providing a web of a lithographic support having a hydrophilic surface;

(ii) applying a coating comprising a phenolic resin on the hydrophilic surface of the web;

(iii) drying the coating;

(iv) heating the web wherein the temperature of the web is maintained above 150ºC during a period of between 1 and 30 seconds; and

(v) winding the precursor on a core or cutting the precursor into sheets.

2. The method according to claim 1 wherein during the heating step the web temperature is maintained above 170ºC during a period of between 1 and 30 seconds.

3. The method according to claim 1 wherein the heating step is carried out by blowing hot air or steam onto the precursor.

4. The method according to claim 1 wherein the heating step is carried out by exposing the precursor to infrared or microwave radiation.

5. The method according to claim 1 further comprising a cooling step between step (iv) and step (v).

6. The method according to claim 5 wherein during the cooling step the web temperature of the precursor is reduced at an average cooling rate which is higher than if the precursor would be kept under ambient conditions.

7. The method according to claim 6 wherein said average cooling rate is at least 0.5ºC/s.

8. The method according to claim 5 wherein during the cooling step the web temperature is reduced from T1 to T2, T1 being higher than Tg and T2 being lower than Tg, at

an average cooling rate which is lower than 10ºC/s, Tg being the glass transition temperature of the coating comprising the phenolic resin.

9. The method according to claim 8 wherein during the cooling step the web temperature is reduced

-in a first phase down to T1 at an average cooling rate of at least 10ºC/s;

-in a second phase from T1 to T2 at an average cooling rate which is lower than 10ºC/s; and

-in a third phase from T2 to about ambient temperature at an average cooling rate of at least 10ºC/s.

10. The method according to claim 8 wherein T1 is Tg+20ºC and T2 is Tg-20ºC.

11. The method according to claim 2 wherein the heating step is carried out by blowing hot air or steam onto the precursor.

12. The method according to claim 2 wherein the heating step is carried out by exposing the precursor to infrared or microwave radiation.

15. The method of claim 2 further comprising a cooling step between step (iv) and step (v).

16. The method according to claim 3 further comprising a cooling step between step (iv) and step (v).

17. The method according to claim 4 further comprising a cooling step between step (iv) and step (v).

18. The method according to claim 15 wherein during the cooling step the web temperature of the precursor is reduced at an average cooling rate which is higher than if the precursor would be kept under ambient conditions.

19. The method according to claim 16 wherein during the cooling step the web temperature of the precursor is reduced at an average cooling rate which is higher than if the precursor would be kept under ambient conditions.

20. The method according to claim 18 wherein said average cooling rate is at least 0.5ºC/s.

21. The method according to claim 19 wherein said average cooling rate is at least 0.5ºC/s.

22. The method according to claim 17 wherein during the cooling step the web temperature of the precursor is reduced at an average cooling rate which is higher than if the precursor would be kept under ambient conditions.

23. The method according to claim 22 wherein said average cooling rate is at least 0.5ºC/s.

24. The method according to claim 6 wherein during the cooling step the web temperature is reduced from T1 to T2, T1 being higher than Tg and T2 being lower than Tg, at an average cooling rate which is lower than 10ºC/s, Tg being the glass transition temperature of the coating comprising the phenolic resin.

25. The method according to claim 7 wherein during the cooling step the web temperature is reduced from T1 to T2, T1 being higher than Tg and T2 being lower than Tg, at an average cooling rate which is lower than 10ºC/s, Tg being the glass transition temperature of the coating comprising the phenolic resin.

26. The method according to claim 24 wherein during the cooling step the web temperature is reduced

-in a first phase down to T1 at an average cooling rate of at least 10ºC/s;

-in a second phase from T1 to T2 at an average cooling rate which is lower than 10ºC/s; and

-in a third phase from T2 to about ambient temperature at an average cooling rate of at least 10ºC/s.

27. The method according to claim 25 wherein during the cooling step the web temperature is reduced

-in a first phase down to T1 at an average cooling rate of at least 10ºC/s;

-in a second phase from T1 to T2 at an average cooling rage which is lower than 10ºC/s; and

-in a third phase from T2 to about ambient temperature at an average cooling rate of at least 10ºC/s.

28. The method according to claim 9 wherein T1 is Tg+20ºC and T2 is Tg-20ºC.

29. The method of claim 11 further comprising a cooling step between step (iv) and step (v).

30. The method of claim 12 further comprising a cooling step between step (iv) and step (v).

31. The method according to claim 29 wherein during the cooling step the web temperature of the precursor is reduced at an average cooling rate which is higher than if the precursor would be kept under ambient conditions.

32. The method according to claim 30 wherein during the cooling step the web temperature of the precursor is reduced at an average cooling rate which is higher than if the precursor would be kept under ambient conditions.

33. The method according to claim 31 wherein said average cooling rate is at least 0.5ºC/s.

34. The method according to claim 32 wherein said average cooling rate is at least 0.5ºC/s.

Evidence Appendix

None.

Related Proceedings Appendix

None.